

REMARKS

By the foregoing Preliminary Amendment, Claim 1 has been amended. Favorable reconsideration of the application is respectfully requested.

In the Office Action of August 4, 2006, Claims 1-4, 7-10, 13 and 14 were rejected under 35 U.S.C. §102(b) on the grounds of anticipation by Sato et al. (Japanese Patent Publication 60085209 A). Applicant wishes to thank the Examiner for explaining most clearly in the Office Action of August 4, 2006 the fact that the Examiner had given no weight to the previous “negative” limitation. With this in mind Claim 1 has been amended to recite “the first piston having a passage therethrough for the flow of hydraulic fluid, a proximal end nearest the poppet valve, a distal end furthest from the poppet valve, and a lower surface located at the proximal end of the first piston,” “the second piston has an upper surface engageable with the lower surface of the first piston located at the proximal end of the first piston,” “the first piston has a socket in the lower surface thereof of a shape and configuration which matches the upper surface of the second piston and the passage through the first piston opens into the socket,” and “the upper surface of the second piston engaging the socket in the lower surface of the first piston to seal the passage through the first piston and with such engagement limiting the movement of the second piston relative to the first piston and preventing the second piston from sliding within the first piston along the passage in the first piston.” It is respectfully submitted that Claim 1 as amended is now novel over Sato et al. by the following features:

1. The first piston has a "proximal end" in which there is defined a "lower surface" which has "a socket." This "lower surface" must be "engageable" by the upper surface of the other piston. In Sato, the first piston shown in Figures 6,7 and 8 is piston 21. The downwardly facing surface of the piston 21 engageable by the upper end of the piston 29 is a surface at the top of the bore 26 in the piston 21, i.e. at the distal end of the piston 21. It is not a lower surface provided at an end of the piston 21 proximal the poppet valve.

2. The surface engaged by the piston 22 in Sato et al. does not have in it a socket. It may be argued that the lowermost surface of piston 21 has a socket in it in that it has a bore 26, but this is not what the claim requires. The claim requires a lower surface which is engaged by the top end of the inner piston and also which has a socket.

3. In Sato et al., the act of engaging the upper piston by the lower piston does not prevent the lower piston sliding within the upper piston. Indeed, the arrangement in Sato et al. specifically provides for this and the piston 22 slides almost the whole length of the upper piston 21 through the bore 26.

It is a key feature of the present invention that the lower piston does not slide within the upper piston. The reason for this is the need to make a system which is actually practical to produce and assemble. The system of Sato requires exact machining because of the need for each of the pistons 21, 22 and the valve stem 14 to be coaxial with each other. Any misalignment will cause some tilting of the piston 22, which will then engage the side surfaces of the bore 26, which will either lead to a malfunction or, at the least, considerable wear. The present invention solves all of these problems by

providing a socket in a lower surface of the upper piston without the lower piston extending through and into a bore provided axially along the upper piston. The alignment of the two pistons does not need to be exact. Indeed, the tapering of the top surface of the lower piston and the tapering of the socket can provide a degree of centering to provide an aligning force, but again this is not crucial in the arrangement of the claimed invention.

The claimed invention provides a practical solution which can be installed and used in an internal combustion engine without the difficulties faced in ensuring high quality engineering and high quality and precision alignment, needed with the system of Sato et al. It is therefore respectfully submitted that the rejection of Claims 1-4, 7-10, 13 and 14 on the grounds of anticipation by Sato et al. should be withdrawn.

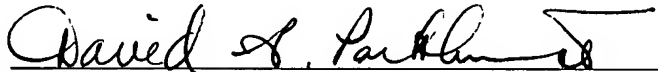
Claims 5, 6, 11 and 12 were rejected under 35 U.S.C. §103(a) on the grounds of obviousness from Sato et al. Claims 5, 6, 11 and 12 depend from Claim 1, and it is respectfully submitted that Sato et al. does not teach, disclose or suggest a first piston having a proximal end and a lower surface located at the proximal end of the first piston, the second piston having an upper surface engageable with the lower surface of the first piston located at the proximal end of the first piston, the first piston having a socket in the lower surface thereof of a shape and configuration which matches an upper surface of a second piston, with a passage through the first piston opening into the socket, and the upper surface of the second piston engaging the socket in the lower surface of the first piston to seal the passage through the first piston, and with such engagement limiting the movement of the second piston relative to the first piston, and preventing the second

piston from sliding within the first piston along the passage in the first piston, as is claimed. It is therefore respectfully submitted that Claims 5, 6, 11 and 12 are novel and inventive over Sato et al. as discussed above, and that the rejection of Claims 5, 6, 11 and 12 on the grounds of obviousness from Sato et al. should be withdrawn.

In light of the foregoing amendments and remarks, it is respectfully submitted that the application should now be in condition for allowance, and an early favorable action in this regard is respectfully requested.

Respectfully submitted,

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